procedure. If one chooses to do a laparoscopy, it should be understood that it is frequently followed by a formal laparotomy. If gross residual disease is present, which is not considered resectable, biopsy specimens should be obtained and laparotomy may be deferred. If, however, visualization is inadequate to make such a decision, or no disease is seen, it is mandatory to proceed with abdominal exploration. If resectable disease is present, it should be removed. If no gross disease is present, a thorough, complete and systematic exploration of the abdomen should be carried out. This should include washings of the pelvis and colic gutters for cytologic examination. Strand-like adhesions should be excised and sent for pathologic review. Biopsy specimens of the infundibulopelvic ligament stumps should be obtained. Random biopsies of the pelvic peritoneum are also suggested. If the uterus, tubes, ovaries or omentum are present, they should be removed. The retroperitoneal space is to be opened and the periaortic nodes sampled. Diaphragmatic biopsies are also of importance. It is imperative that this procedure be carried out through an incision which allows total visualization of the intra-abdominal contents. Only after such an operative procedure has failed to show residual carcinoma can chemotherapy be discontinued with confidence.

The largest reported series on this subject comes from the M. D. Anderson Hospital in Houston. Of 103 patients in whom second-look procedures were done, 23 patients were found to have no evidence of carcinoma. Of these patients, 19 remain clinically free of disease and are not receiving chemotherapy. In four who were free of cancer at the second-look operation, recurrent disease developed after therapy was discontinued. All had received only four courses of chemotherapy and the possibility of adequate sampling at the time of laparotomy was raised. Of the remaining 80 patients with tumor present at laparotomy, there was complete removal of all tumor in 29. Of these 29, 14 are living without evidence of disease, 7 are alive with cancer and 8 are dead of disease.

The use of second-look laparotomy in patients with ovarian carcinoma has the advantage of identifying those patients in whom chemotherapy can be successfully discontinued as well as the subgroup of patients who can be rendered disease free by surgical resection. The latter group may indeed benefit by the more aggressive chemotherapeutic regimens now being developed.

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Microsurgery in Gynecology

OCCLUSION OF THE FALLOPIAN TUBES accounts for approximately 20 percent of the causes of infertility. The occlusion may have resulted from infection with associated damage to the endosalpinx, or from a sterilization procedure. Tubes can be repaired surgically and, until recently, the instruments and sutures were the same as those used for most gynecological operations. The types of tubal surgical procedures done consist of (1) reimplantation of a tube occluded at the cornual end, (2) reanastomosis of separated portions of tube, (3) salpingostomy and (4) separation of peritubal and fimbrial adhesions.

Microsurgery, which has been used in other surgical specialties for several years, was brought into the gynecologist's armamentarium by Kurt Swolin, who published the first series of tubal repairs by this technique in 1967. The advantage of microsurgery is that it permits the use of small needles and fine sutures ranging from 5-0 to 10-0 in size. In order to use these materials an operating microscope with magnifications of $\times 5$ to $\times 20$, or loupe with magnifications of $\times 2.5$ to $\times 6$, is necessary. By using these instruments a gynecologist can reanastomose two separate ends of a fallopian tube in two layers, with a few fine sutures through the muscle layer and slightly thicker ones through the serosa. Bleeding is controlled by a bipolar cautery with a fine needle tip.

Tubes with the endosalpinx damaged by infection will continue to respond poorly to surgical therapy. Tubes which have had a segment removed for the purpose of sterilization, leaving two healthy portions, are ideal for repair. In these cases, two-layered reanastomosis can be obtained by microsurgery. Successful reanastomosis as shown by a subsequent pregnancy will depend on the skill of the operator, and should be at least 40 percent.

An important point in the workup before operation is to ensure that the couple does not have an additional cause for infertility, such as oligo-

spermia, failure to ovulate or hostile cervical mucus. An infertility workup should always be carried out, and maximum information obtained concerning the tubes by seeing the old operative records, using hysterosalpingography and viewing the tubes through a laparoscope. For couples where the only problem consists of tubal occlusion, microsurgery has improved the prognosis and enabled many previously infertile couples to achieve a pregnancy.

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Real-Time Ultrasound in Obstetrics

THE ABILITY to visualize and measure intrauterine structures has resulted in new information in the clinical practice of obstetrics. Real-time (RT) imaging is the term applied to ultrasound scanners that display moving structures. This is accomplished by high-speed presentation of a series of images at frame rates in excess of 30 per second, the usual level for flicker-free viewing. Image resolution has been greatly improved, although it is generally inferior to static B-scans.

The enthusiasm among physicians in RT echography is enhanced by the small size and ease of operation of this equipment, and the low cost and the short time involved in scanning the gravid uterus. Most units are portable and can be used at the bedside or in the office. Fetal movements and cardiac pulsation can be visualized from as early as eight weeks gestation, thus allowing differential diagnosis between threatened abortion and fetal demise. For amniocentesis, pockets of amniotic fluid can be identified and the depth for puncture be determined in order to avoid injury to the fetus, umbilical cord or placenta. In patients with third trimester bleeding the placenta can be localized.

The most useful measurement in evaluating fetal age and growth is the biparietal diameter of the skull. The accuracy of these measurements is approximately 2 mm with the use of RT as compared to caliper measurements of neonates delivered by repeat cesarean section. Sonar dating is indicated in patients with uncertain dates or size-date discrepancies, and in high-risk pregnancies where preterm delivery is likely if trouble arises later. The optimal time for dating is from 22 to 26 weeks because body size of all fetuses is rather similar during this period of pregnancy.

Optional equipment improving the efficiency of RT scanners is a camera to take pictures of representative tomograms, electronic calipers, a freeze-frame for measurements, and a key board for patient identification and labeling of structures on the scan.

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